

**What is claimed is:**

**1. A combustion burner comprising:**

a mixture nozzle defining a mixture fluid passage through which a **mixture fluid** containing a **powdered solid fuel** and a conveyor gas for transferring said solid fuel flows toward a furnace;

Some of the Claims of US Patent No: 4,572,084 disclose the following:

**What is claimed as new is:**

1) In a combustion device for burning a **powdered coal-fluid mixture**. This combustion device consists of: a combustion chamber, first nozzle means communicating with the chamber for spirally swirling the **coal-fluid mixture** along a path in the chamber to form a hollow sheath of **coal-fluid mixture**. A second nozzle means communicating with the chamber and located generally centrally of the hollow sheath for spirally swirling combustible gas-air mixture in the chamber and within the sheath of **coal-fluid mixture** in the same direction of swirl to reinforce the swirling motion of the **coal-fluid mixture** forming the sheath without general mixing therebetween. To promote volatilisation and enhance the combustion of the **coal-fluid mixture**, there are means for burning the **coal-fluid mixture** and the gas-air mixture within the chamber. The first supply means fluidly communicating with the first nozzle means for providing **coal-fluid mixture** to the first nozzle means and the chamber, second supply means fluidly communicating with the second nozzle means for providing gas-air mixture to the chamber, the second nozzle means including an elongated insert having upstream and downstream end portions, the downstream end portion of the

insert being adjacent the second supply means, a plurality of spaced generally spiral channels in the outer surface of the insert extending from the upstream end portion and terminating in the downstream end portion. The channels communicate between the second supply means and the chamber for spirally swirling the gas-air mixture prior to egressing from the second supply means into the chamber.

- 2) In a combustion device in accord with claim 1 wherein said **coal-fluid mixture** is a **coal-water slurry**.
- 3) In a combustion device in accord with claim 1 wherein said means for burning said **coal fluid mixture** is located outwardly of said sheath and includes means for supplying gas-air mixture about said coal-fluid sheath whereby said coal-fluid sheath is more completely combusted.
- 4.) In a combustion device in accord with claim 1 wherein said **coal-fluid mixture** is a **coal-air mixture**.

Accordingly, Applicant's recitation of "suspended coal dust" or "coal dust slurry" appropriately narrows the Claim in a manner supported in the as-filed disclosure when referring to a "fluid hydrocarbon fuel", or even when referring to a "conventional fluid hydrocarbon fuel". The Examiner with his argument in fact proves the case for Applicant needing to narrow and define the broad description of "fluid hydrocarbon fuel", because someone not skilled in the relevant art would not be readily able to understand the development in automatic coal combustion and the methods of solid carbon conversion to a fluid mixture, as employed for many years especially in the commercial and industrial combustion industry.

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A "fluid hydrocarbon fuel" includes any fuel which has its carbon content hydrogenated, and in which powderized carbon is necessarily suspended in a gas or liquid.

I am sure the Examiner is aware of the fact that, if a solid matter is changed to a consistency during which it is in a state of flux and is able to constantly alter its shape, such matter must be considered to have changed its consistency from a solid to a fluid.

Should the Examiner however be able to provide the necessary proof that a finely powderized coal dust suspended in air or water is NOT considered a fluid mixture or a fluid hydrocarbon fuel by the industry, or by anyone skilled in the relevant art for that matter, then Applicant will agree to amend the referred to Claim 59 in the application.

Applicant further provides additional references for the Examiner to determine what is considered a "fluid" and a "liquid", and NOT a solid.

For the Examiner's understanding, the following is the Webster's Dictionary definition of "FLUID":

**Definition: Fluid**

**Adjective**

1. Subject to change; variable; "a fluid situation fraught with uncertainty";  
"everything was unstable following the coup.
2. Characteristic of a fluid; capable of flowing and easily changing shape.

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3. Smooth and unconstrained in movement; "a long, smooth stride"; "the fluid motion of a cat"; "the liquid grace of a ballerina"; "liquid prose".
4. In cash or easily convertible to cash; "liquid (or fluid) assets".
5. Affording change (especially in social status); "Britain is not a truly fluid society"; "upwardly mobile".

**Noun**

1. A substance that is fluid at room temperature and pressure.
2. A continuous amorphous substance that tends to flow and to conform to the outline of its container: a liquid or a gas.

**Specialty Definition: Fluid**

**Aerospace**

A substance which, when in static equilibrium, cannot sustain a shear stress; a liquid or a gas. This concept is only approximated by actual liquids and gases.

**Mining**

- A. The quality, state, or degree of being fluid: a liquid or gaseous state. CF:gas
- B. The physical property of a substance that enables it to flow and that is a measure of the rate at which it is deformed by a shearing stress, as contrasted with viscosity: the reciprocal of viscosity.
- C. In mineral transport, **the term FLUID is not confined to liquids and slurries, but is also used for finely divided solids that flow readily in aircurrents, fluosolids reactors, or through dry ball mills.**

**Fluid Mechanics**

A branch of science that deals with the special properties of liquids, vapors and gases.

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Based on the expert definition of "Fluid" and "Hydrocarbon Fuel", Applicant is of the opinion that the Claims 73 and 83. narration under critic is in fact fully supported in the description of the application in accordance with all requirements of 35 USC 112, first paragraph.

With regards to the recitation of the more narrow ranges in the Claims as to the fuel and air temperature, it appears that the Examiner has accepted Applicant's arguments as to the more detailed temperature ranges of 165 degrees F to auto ignition level for heating, and of plus 50 degrees F to minus 40 degrees F for cooling, as within the original ranges as claimed in the Parent Patent. Applicant specifically recited such more narrow range to distinguish such heating and cooling temperatures from any prior art which may use such applications but for different reasons and expectations.

### ***Double Patenting***

The Examiner correctly agrees that Applicant provided substantial arguments as to the errors in the double patenting rejection, especially when Applicant is relying upon 35 U.S.C. 121 asserting that neither Applicant's prior US Parent Patent 6,736,118 nor the co-pending application 10/798,292 may be applied.

However, it is Applicant's opinion that the Examiner is again in error when opposing such arguments and stating that the Claims of the divisional application 10/798,294 under examination, are not distinct from the Claims of Parent Patent No: 6,736,118 and from application 10/798,292. The Examiner should review the Office Action of application 10/293,357 for Parent Patent No: 6,736,118, wherein

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Examiner McMahon provides a listing of the groups of Divisions and Election Restrictions requested by the Patent Office under U.S.C. 121, especially providing the specific division under class 60 for various types of combustion turbines, which, as the Examiner already agrees and accepts, and Applicant will herein amend the appropriate Claims accordingly.

As previously identified, the following page is a direct copy of the Election/Restriction from the Patent Office as received by Applicant.

Therefore, if such Claims were equally NOT DISTINCT from each other when the Office requested divisions under the Election/Restriction, the Office established the rule that the Claims in such Parent Application become DISTINCT when they are related to the different combustion mechanism classifications as indicated. Otherwise the Office would have viewed the Claims, especially Claim 1., as claiming a combustion method applicable to any combustion process, regardless in which category the combustion mechanism, which benefits from the method claimed, was classified.

However, in order to resolve the matter in short, Applicant will amend Claims 71. to 92. to more precisely reflect the wording used in Claim 1. and 14. of Parent Patent 6,736,118, while at the same time restricting the same Claims 71. and 83. such as to solve any further Double Patenting Rejection and Claim Rejections under 35 USC 102, and 103.

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### **DETAILED ACTION**

Note that claims 24 (second instance) through 27 have been renumbered as claims 25-28.

#### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 8-11 and 22-25, drawn to various types of heaters, classified in class 431, subclass \*\*\*.
- II. Claims 12 and 26, drawn to a single or dual cycle power generator, classified in class 310, subclass 113+.
- III. Claims 13 and 27, drawn to a gas turbine engine, classified in class 60, subclass 204+.
- IV. Claims 14 and 28, drawn to an internal combustion engine, classified in class 123, subclass 550.

The inventions are distinct, each from the other because of the following reasons:

Inventions I, II, III, and IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operation, different functions and different effects.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.